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BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Re: Filing of U.S. Patent Application
Inventors: Michael CARROLL
Title: SYSTEM AND METHOD FOR SELECTING AND PROCESSING INFORMATION IN AN ELECTRONIC DOCUMENT
Attorney Docket No.: 52817.000102

Dear Sir:

Attached is a new patent application for filing in the United States Patent and Trademark Office including nine (9) pages of specification, four (4) pages of claims (numbered 1-20), one (1) page Abstract, eight (8) sheets of drawings (labeled Figs. 1-9). Also enclosed is an executed Declaration, Assignment and Assignment Recordation Transmittal Form.

The filing fee is calculated as follows:

					Amount
			Basic Filing Fee		$ 760.00
			Rate		
		Extra	Large Entity	Small Entity	
Number of Claims in Excess of 20	17 -20	0	$18	$9	
Independent Claims in Excess of 3	4 -3	1	$78	$39	$ 78.00
Assignment Recordation					$ 40.00
			TOTAL FEE DUE		**$ 878.00**

A check in the amount of $878.00 is attached to cover the basic application filing fee, including excess claims. In the event of any variance between the amount enclosed and the Patent and Trademark Office charges, please charge or credit any difference to the undersigned's Deposit Account No. 50-0206.

Please direct all communication concerning this application to:

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Respectfully submitted,

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Dated: October 21, 1999

SYSTEM AND METHOD FOR SELECTING AND PROCESSING INFORMATION IN AN ELECTRONIC DOCUMENT

Related Applications

This application claims priority based on U.S. Provisional Patent Application Serial No.60/114,573, entitled "System and Method for Selectively Highlighting Portions of a Document," filed December 31, 1998. This application is also related to co-pending U.S. Patent Applications entitled, "System and Method for Selecting and Deselecing Information in an Electronic Document," Attorney Docket No. 52817.000101, filed herewith.

Field of the Invention

The invention relates to the processing of electronic information, and more particularly to processing non-contiguous regions of documents without the necessity of re-marking the boundaries of selected areas.

Background of the Invention

The widespread acceptance of modern word processing and graphics systems has increased the demand for electronic document manipulation features. One common and even expected feature on word processing packages and other software applications is the ability to select regions of an electronic document. The selected region may be then processed by functions such as copy to a buffer, print or cut.

In current applications, selection is generally performed by initiating a select function, manipulating a position indicator, and terminating the select function. The initiation and termination of the select function can be accomplished by a number of techniques, including keystroke input and mouse input. When the electronic document is text-based, then the common convention is to indicate a live end and an anchor end. The location at which the select function was initiated serves as the anchor end, while the location at which the select function was terminated serves as the live end. All text

between the anchor end and the live end are selected. Once a region has been selected, limited manipulation of the selected region is available.

In word processing technologies, for example, one limitation is that the actual selection of the region of the document which the user wishes to select is not convenient. Specifically, in known word processing applications the user must first place a positional indicator, such as a cursor, at the beginning of a region of text he or she wishes to select, initiate the select function such as by clicking a mouse, and then move to the intended end of the selected region. However, if the user wishes to process noncontiguous regions of information, the user must select each of the noncontiguous regions separately. Other drawbacks exist. More convenient, intuitive and faster technology for manipulating textual information is desirable.

Summary of the Invention

The invention overcoming these and other problems in the art relates to a system and method for processing target information within an electronic document which permits a user to select target information regions and deselect separating information regions of an electronic document in one continuous operation. The target information is the information that is to be selected and processed by a particular computer function. In a preferred embodiment, the invention achieves this processing flexibility in part by a method that selects text when a cursor is operated in one direction and deselects text when a cursor is operated in another direction.

An object of the invention is to provide a system and method that allows users to process target information when the target information regions are noncontiguous without having to select and process each of the noncontiguous target information regions separately.

Another object of the invention is to increase user efficiency by selecting text when a positional indicator is manipulated in one direction and deselecting text when a positional indicator is manipulated in a second direction.

An object of the invention is to provide a system and method that allows users to process target graphical information, in which movements of a positional indicator in one direction will serve to select the associated graphical information whereas movements of a positional indicator in another direction will serve to deselect the associated graphical information. In all embodiments, selected information can be modified without the loss of the original selected text.

Another object of the invention is to provide a system and method that permits a user to make a first selection, perform a process, and then make further modifications to the first selection.

Brief Description of the Drawings

Fig. 1 is an illustration of a computer workstation processing an electronic document according to the invention.

Fig. 2 depicts a flowchart of the steps performed by a preferred embodiment of the present invention.

Fig. 3 is an illustration of an electronic text document in which a selected region has been expanded according to the invention.

Fig. 4 is an illustration of embedded delimiter tags within the electronic text document processed according to the invention.

Fig. 5 is an illustration of an embodiment of the invention before a region of text is deselected.

Fig. 6 is an illustration of an embodiment of the invention after a region of text is deselected.

Fig. 7 is an illustration of a graphical-based embodiment of the present invention displaying a first selected region.

Fig. 8 is an illustration of a graphical-based embodiment of the present invention displaying a first selected region and a second deselected region.

Fig. 9 is an illustration of the output of a graphical-based embodiment of the present invention.

Detailed Description of Preferred Embodiments

The invention will be described with respect to a workstation 120 at which a user processes an electronic text 108. Workstation 120 includes a display screen 102, such as a computer display screen, which displays electronic text 108. Display screen can be a CRT, LCD or other type of computer or other display. Workstation 120 includes a central processing unit 110, which may contain a controller operating under programmed control, storage and memory connected by an electronic bus and related circuitry (not shown) that will be appreciated by persons skilled in the art. Workstation 120 for instance can be a personal computer running the Microsoft Windows™ 95, 98 or NT™ operating systems, or Linux, Unix or other operating systems.

Display 102 displays the electronic text 108 to the user and receives input from the user to manipulate the text and its characteristics. In the embodiment illustrated in Fig. 1, the input devices to the central processing unit 110 include a keyboard 112, although it will be appreciated that other types of input devices, such as mice, trackballs, microphones with speech to text converters and others are contemplated for use by the invention. Keyboard 112 includes a set of keys 114, including a set of alphanumeric keys such as the QWERTY keyboard, and cursor arrow keys 116. Cursor arrow keys 116 have arrows indicating directions marked on them, and striking those keys causes a cursor 104 displayed on display 102 to move in a corresponding direction, as understood by persons skilled in the art.

In a preferred embodiment, the electronic document is a text-based document 108 as illustrated in Fig. 1. In Fig. 1, the user has selected a region of the text 106. This region is selected by any method well known in the art. For example, a user could use a keyboard, a mouse, or a stylus to indicate the terminal points of the selected region. In a preferred embodiment, the selected region 106 is represented as a highlighted region. Selected region 106 may be shown on display 102 in a different color, in a different intensity or otherwise

displayed as a distinct region within electronic text 108. The edges of the selected region can either be designated as an HTML style text tag. such as <select>. or it can be a visual representation, such as a marker or an edge to a visually highlighted region. In the illustrated embodiment. the user wishes to extend the selected region 106 to the end of the sentence. A positional indicator, which in a preferred embodiment is a cursor 104, is located at the edge of the selected region adjacent to the terminal point.

Fig. 2 depicts a high-level flow chart of the steps performed by a preferred embodiment of the present invention. The first step is to receive input which initiates the select function (step 201). This step can be implemented with a predetermined set of keystrokes, depression of a mouse key, or other mechanisms known in the art. Once the select function is initiated, a begin active select delimiter is created at the location of the positional indicator (step 202). Further input is accepted to move the positional indicator (step 203). As the positional indicator is moved, it creates an active select region between the begin active select delimiter and the cursor. In a preferred embodiment, the electronic document is a textual document, and the selection process selects text along lines of a written page as is well known in the art. The active select region preferably has a different appearance than text outside of this region. Once the positional indicator is in the desired location, input is accepted to terminate the select function (step 204).

Once the select function is terminated, an end active select delimiter is set at the current position of the cursor (step 205). In a preferred embodiment, information is selected when the begin active select delimiter is to the left of or above the end active select delimiter (step 220). If the information was previously selected, then it will remain selected. If regions of the active select region were previously selected whereas regions of the active select region were non-selected, then the entire region is preferably selected. In a preferred embodiment information is deselected when the begin active select is to the right of or below the end active select delimiter (step 230). If the information

was non-selected, then it will remain non-selected. If the information contained in the active select region was partially selected, then the entire region will be deselected. In a preferred embodiment, selected information will have visually distinguishable features, such as highlighting.

Fig. 3 provides an illustration of the present invention. The positional indicator, preferable a cursor 104, is positioned at the edge of the selected region 106. The selected region 106 is preferably highlighted to distinguish it from other non-selected regions. By striking a predetermined set of keystrokes on keys 114, the user preferably creates a begin active select delimiter. The set of keystrokes might be, for example, the depression of the "Control" key and holding that key down while hitting the "S" key, for selecting. Once the predetermined set of keystrokes is input, the cursor 104 can be moved by pressing the cursor arrow keys 116 to cause the cursor 104 to slide to the desired location 118. While the select function is on, each word between the begin select tag and the cursor is known as the active select region. Preferably, the active select region is displayed in a different manner than both the selected region and the non-selected region. For example, while the selected region is presented as a highlighted region of a particular color, the active select region is preferably presented as a highlighted region of another color.

When the user sees the edit cursor 118 at the position he or she desires, then the user provides user input to terminate the select function. For example, in a preferred embodiment, the user may strike a second set of predetermined keystrokes to indicate that the new position of the edit cursor is the point at which termination of the selected region is desired. This second set of keystrokes may be the same Control/S keystroke as the first set, or another according to particular implementations. Once the select function is terminated, an end active select delimiter is inserted at the location of the cursor 104. In Fig. 3, the begin active select delimiter is inserted to the right or below the end active select delimiter. Therefore, the active select region is converted to a selected region having a similar appearance to the previously selected region.

As illustrated in Fig. 4, in one embodiment the activation of the first set of keystrokes to execute the selective highlighting of the invention works to modify a pair of embedded delimiter tags 124, 126. Embedded delimiter tag 124 is shown as a begin tag, while embedded delimiter tag 126 is shown as an end tag, and each is shown in Hyper Text Markup Language (HTML) format. It will be appreciated however that other types of document delimiters and conventions for highlighting are contemplated. It is further contemplated that by inserting additional delimiter tags between the embedded delimiter tags 124 and 126, non-contiguous regions of information, such as text, could be selected for further processing.

The invention also contemplates the preparation and storage of computer software in a machine-readable format such as a floppy or other magnetic, optical or other drive, which upon execution carries out the selective highlight actions of the invention.

Figs. 5 and 6 illustrate information being deselected with the present invention. Specifically, figs. 5 and 6 demonstrate deselecting of the word "quick." In Fig. 5, the cursor 104 is moved to a position to the right of "quick." The select function is then initiated by a keystroke combination, clicking a mouse button, or other input mechanism. Initiation of the select function creates a begin active select delimiter in the location of the cursor 104. The cursor 104 is then moved to the left until the cursor 104 is located to the right of the word "quick." As the cursor is moved to the left, each of the letters between the cursor 104 and the begin active select delimiter are preferably displayed in a different color than both the selected region and the non-selected region.

Once the cursor 104 is in the desired position, the select function is then terminated by a keystroke combination, clicking a mouse button, or other input mechanism. Because the begin active select delimiter is to the right of the end active select delimiter, the active select region is deselected, as displayed in Fig. 6. The deselecting is preferably implemented by inserting an end select delimiter to the right of the first information target region ("The"), and inserting

a begin select delimiter to the left of the second information target region ("brown fox jumped over the fence").

The steps presented in Fig. 2 can be repeated until all of the target information is selected and nothing but target information is selected, as depicted in Figs. 5 and 6. Furthermore, the content of the target information can be process dependent. For example, the target information for a print process could consist of the words "The quick brown fox jumped over the fence," as depicted in Fig. 3. Then, for a copy process, the target information could consist of the words "The" and "brown fox jumped over the fence," as shown in Fig. 6. The target information can exist on different pages, on different documents, and in different applications. Once all of the target information has been selected, then the user can process the information in accordance with any available functions. For example, the user could print, copy, or delete the selected text.

Figs. 7, 8 and 9 depict an embodiment of the present invention applied to a graphically-based document 300. In Fig. 7, the user has selected region 301 by placing a cursor at the upper left corner of selected region 301, initiating a select function, and moving the positional indicator to the lower right corner of the selected region 301. Once the boundaries of the selected region 301 are set, the select function is terminated by, for example, a keystroke combination. The selected region 301 can be portrayed in different color, having a predetermined boundary, or otherwise distinguished from non-selected region.

Fig. 8 depicts a deselected region 302. Deselected region 302 is designated by positioning the positional indicator at the lower right corner of the deselected region 302, initiating the select function, moving the positional indicator to the upper left corner of the deselected region, and terminating the select function. The deselected region 302 can be portrayed in different color, having a predetermined boundary, or otherwise distinguished from selected region. Once the target region has been selected, the user can then process the

information as required. For example. the user could cut the selected information 301 and paste it to a new location. as shown in Fig. 9.

The foregoing description of the system and method of the invention is illustrative. and variations in configuration and implementation will occur to persons skilled in the art. For instance, while the adjustment of the selected region has been described as enlarging and deselecting, it is also contemplated that a user could modify information that is not proximal to the selected text, such as information contained on different pages or in different files. Furthermore, the invention has been described as selecting information when the positional indicator is moved in a first set of directions and deselecting when the positional indicator is moved in a second set of directions. These sets of directions could be adjusted, either by adjustments to the programming code or by integrating an interface that enables a user to establish the function associated with the a particular input. The scope of the invention is intended to be limited only by the following claims.

Claims

1. A method of processing at least two target information regions wherein at least one information separates the two target regions within an electronic document, the method comprising the steps of:

a) accepting input to select the target information regions and the information separating region;

b) accepting input to deselect the information separating region; and

c) accepting input to process the target information regions.

2. The method of claim 1, wherein the target information regions comprise text, and at least two target information regions are separated by at least one information separating region.

3. The method of claim 2, wherein step (a) comprises the step of storing a first begin select delimiter to the left of a first region and a first end select delimiter to the right of a second target information region in an electronic file.

4. The method of claim 3, wherein step (b) comprises the step of accepting input to deselect the information separating region by storing a second end select delimiter to the right of the first target information region, said second end select delimiter corresponding with the first begin select delimiter, and storing a second begin select delimiter to the left of the second target information region, said second begin select delimiter corresponding with the first end select delimiter.

5. The method of claim 1 further comprising step (d) accepting further input to change a number of the target information regions.

6. The method of claim 1, further comprising step (d) accepting further input to change the content of the target information regions.

7. The method of claim 1, wherein the electronic document comprises graphical information.

8. The method of claim 7, wherein the target information regions and the information separating region are each designated by a box, each box having two delimiter tags located at opposite corners.

9. A system for processing at least two target information regions within an electronic document, comprising:

an input interface to accept input to select the target information regions; and

a processor unit connected to the input interface, the processor unit processing the target information regions.

10. The system of claim 9, wherein the target information regions comprise noncontiguous textual information.

11. The system of claim 10, wherein the processor unit stores a begin tag and an end tag for each of the target information regions.

12. The system of claim 11, further comprising an output interface to transmit a display of a region of text selected as one of the target information regions in a different manner than a region of text selected as one of the information separating regions.

13. The system of claim 9, wherein the input unit accepts input from at least one of a keyboard, a speech to text converter, a mouse, a pressure pad and a trackball device.

14. The system of claim 9, wherein the input interface receives input for a positional indicator and the processor unit selects information when the positional indicator is moved in a first direction and deselects information when the positional indicator is moved in a second direction.

15. The system of claim 9, wherein the electronic document comprises graphical information.

16. A computer readable medium having computer readable program code embodied therein for selecting noncontiguous information of an electronic document selectively divided into at least two target information regions and at least one information separating regions, the computer readable program code in the computer useable medium comprising:

computer readable program code for causing a computer to accept input for selecting the target information regions of the electronic document;

computer readable program code for causing a computer to accept further input to deselect the information separating regions; and

computer readable program code for causing a computer to process the target information regions.

17. A system for processing noncontiguous target information within an electronic document, the system comprising:

input means to accept input for selecting target information regions and deselecting information separating regions; and

processor means for processing the target information regions, said processor means operatively connected to the input means.

18. The system of claim 17, wherein the noncontiguous target information is textual information.

19. The system of claim 18, wherein the processor means stores a begin tag and an end tag for each of the target information regions.

20. The system of claim 19, wherein display means for displaying a region of text selected as one of the target information regions in a different manner than a region of text selected as one of the information separating regions, said display means being operatively connected to the processor means.

Abstract of the Disclosure

A system and method processes selected regions in an electronic text to edit the selected region on a continuous basis, without destroying the original highlighting and forcing the user to re-bracket the entire section. The user can extend, retract, and separate selected regions. These selected regions can then be universally processed with any function available to the processor, including highlighting, printing, copying, deleting, or spell checking. The invention economizes on keystrokes and cursor actions, since the whole region of text desired to be highlighted does not have to be rebuilt every time a change is made. The invention also enables a user to select text by moving a cursor from left to right and top to bottom, and to deselect text by moving a cursor from right to left and bottom to top.

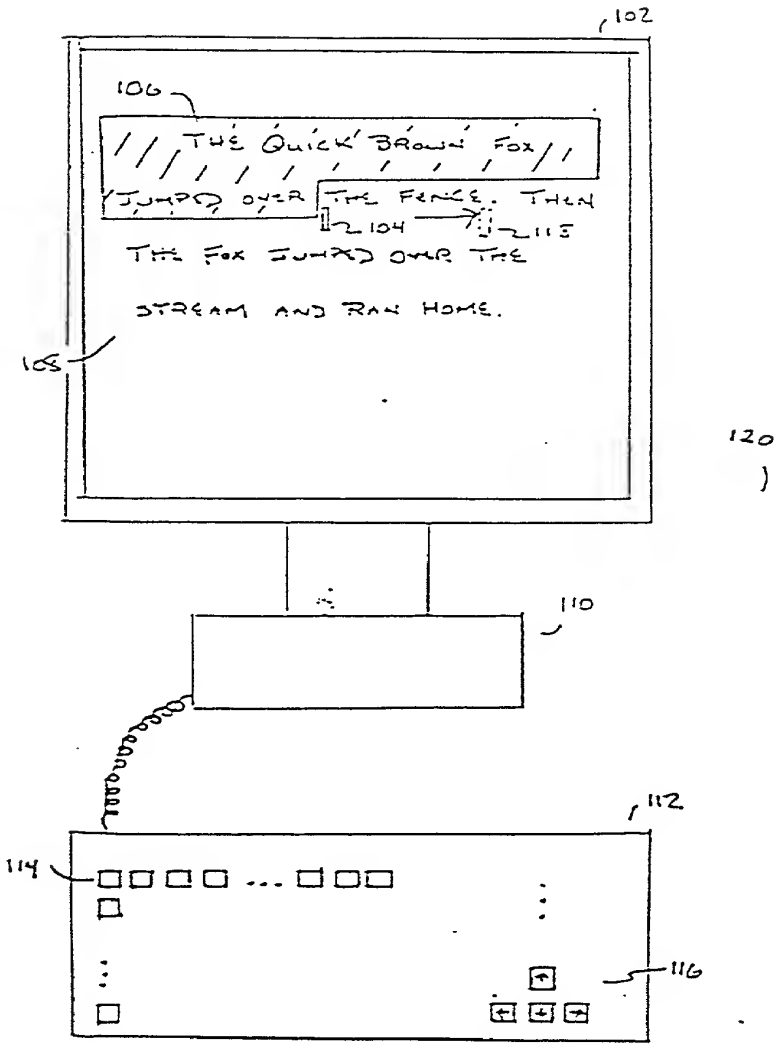
102
106
THE QUICK BROWN FOX
JUMPED OVER THE FENCE. THEN
104
113
THE FOX JUMPED OVER THE
STREAM AND RAN HOME.
108
120
110
112
114
116

FIG. 1

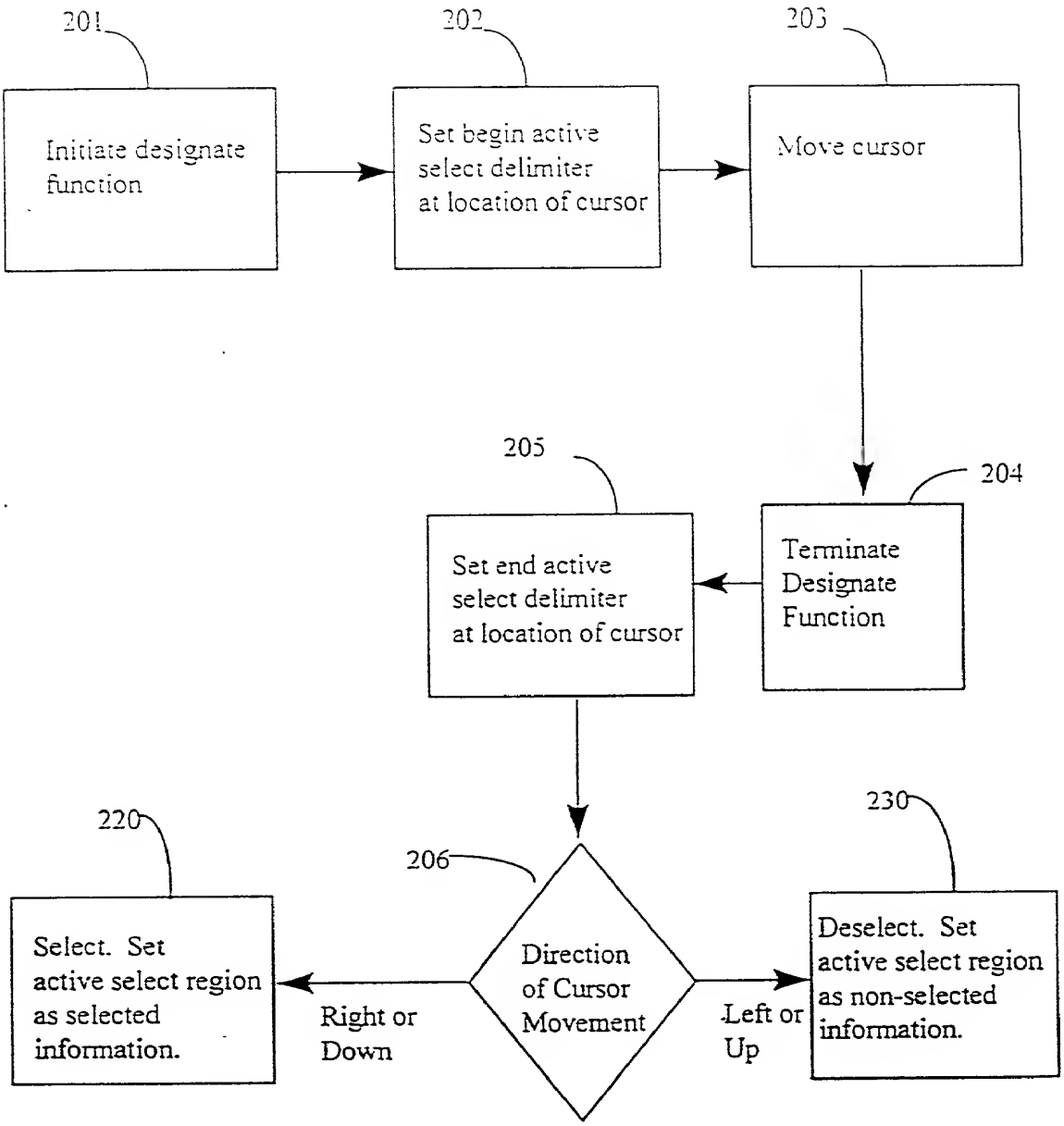
201
Initiate designate function
202
Set begin active select delimiter at location of cursor
203
Move cursor
204
Terminate Designate Function
205
Set end active select delimiter at location of cursor
206
Direction of Cursor Movement
Right or Down
Left or Up
220
Select. Set active select region as selected information.
230
Deselect. Set active select region as non-selected information.

Fig. 2

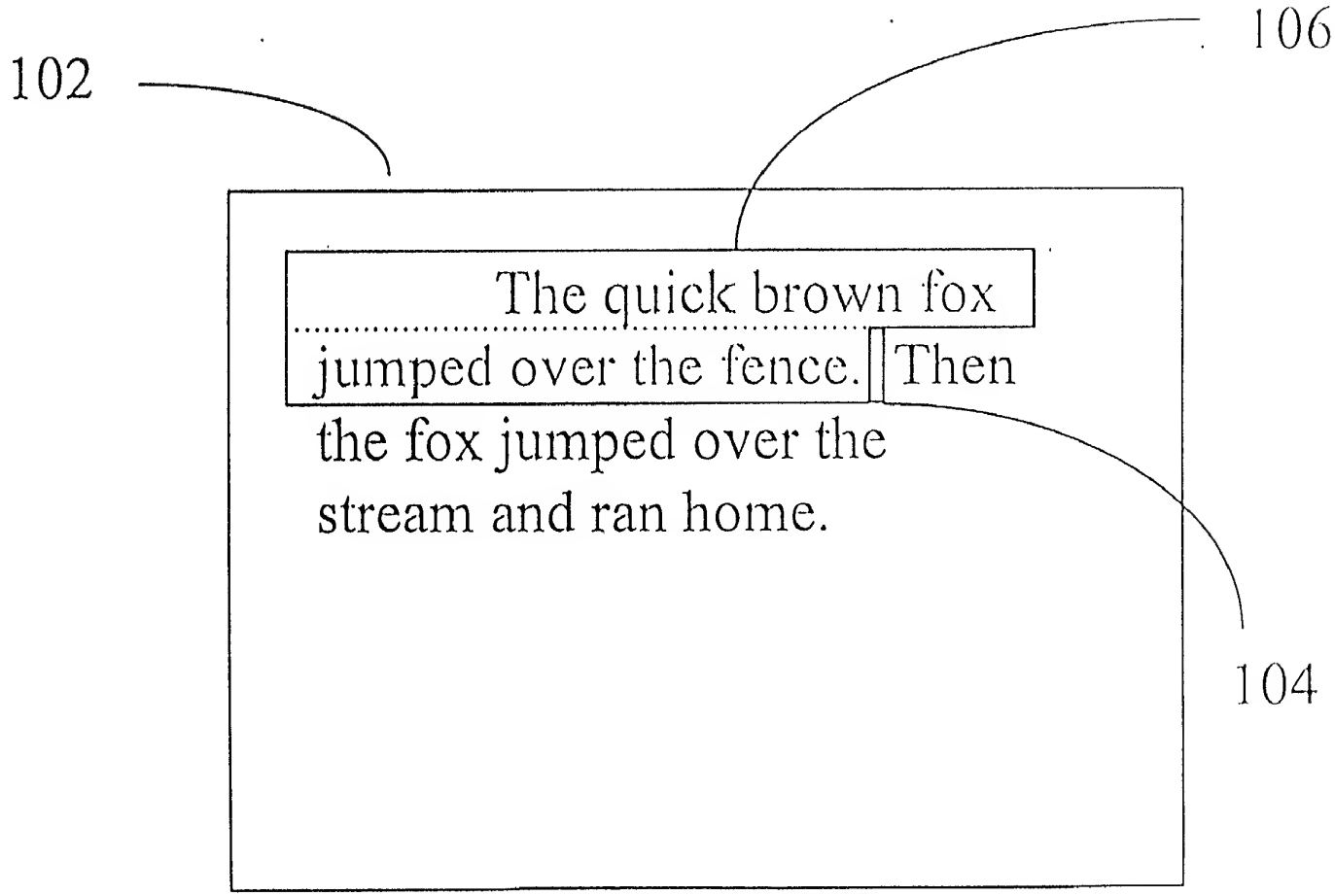
102
106
The quick brown fox jumped over the fence.
Then the fox jumped over the stream and ran home.
104

Fig. 3

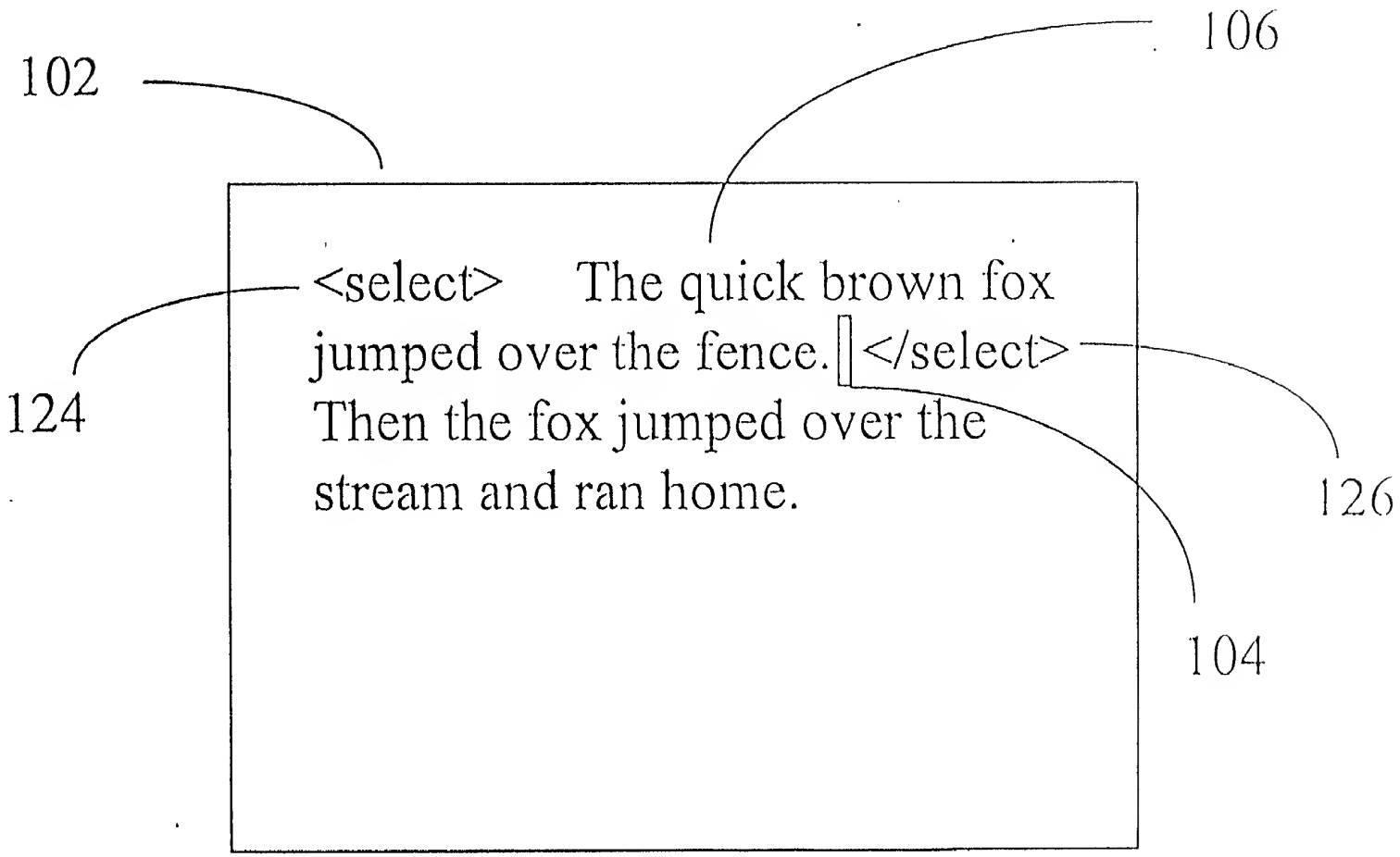
102
106
<select> The quick brown fox jumped over the fence. </select>
Then the fox jumped over the stream and ran home.
124
126
104

Fig. 4

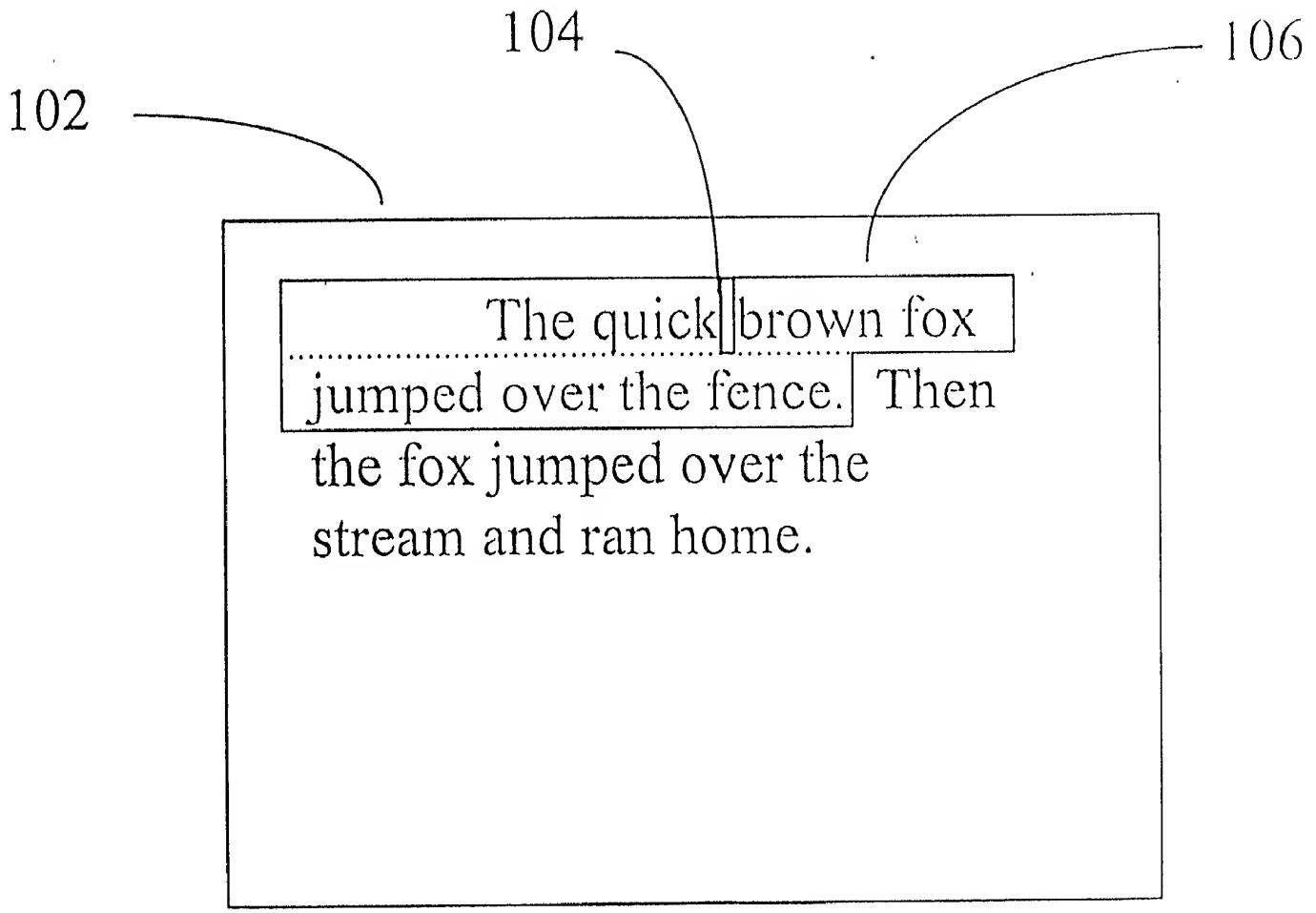
104
106
102
The quick brown fox
jumped over the fence. Then
the fox jumped over the
stream and ran home.

Fig. 5

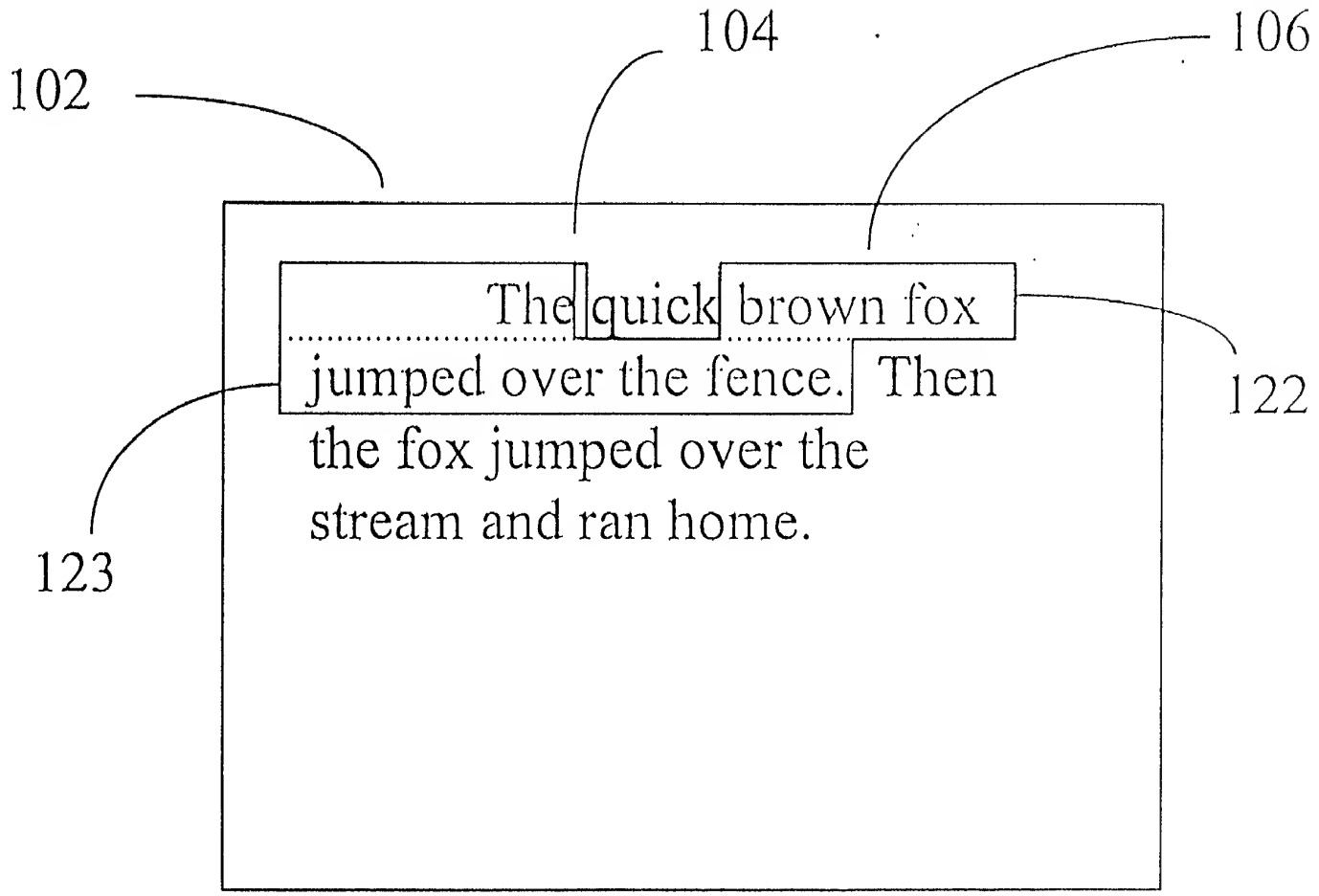
102
104
106
The quick brown fox
jumped over the fence. Then
the fox jumped over the
stream and ran home.
122
123

Fig. 6

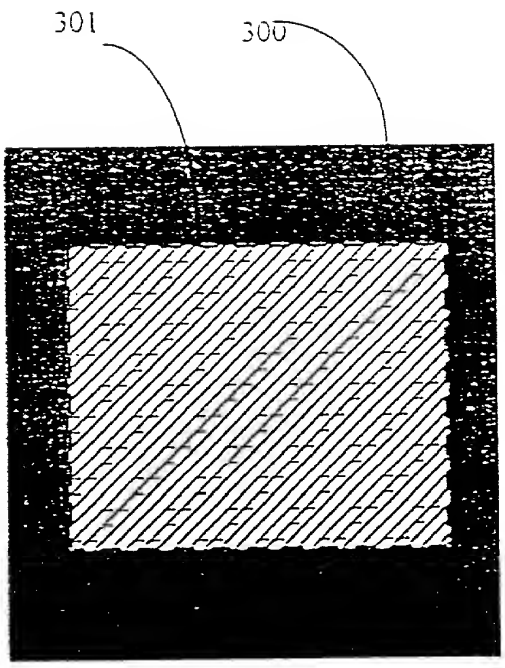

Fig. 7

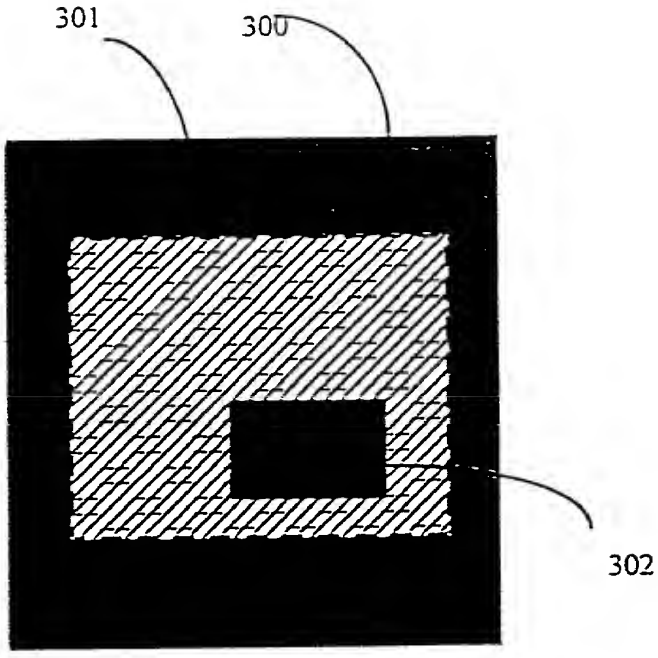

Fig. 8

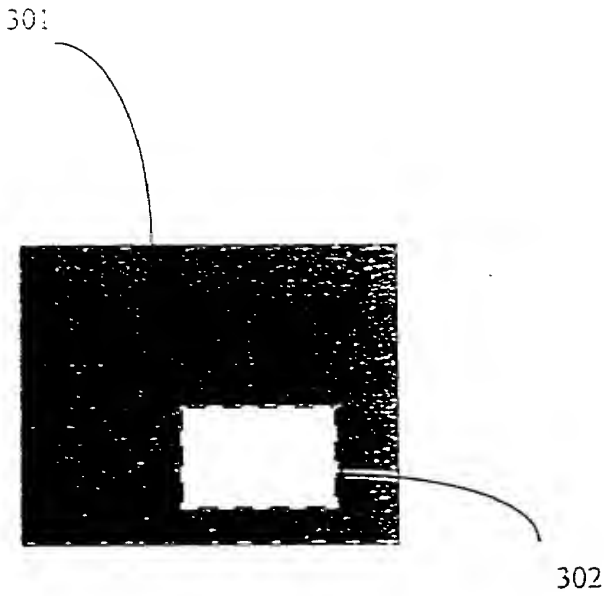

Fig. 9

SOLE DECLARATION FOR PATENT APPLICATION

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe that I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **SYSTEM AND METHOD FOR SELECTING AND PROCESSING INFORMATION IN AN ELECTRONIC DOCUMENT** the specification of which

(X) is attached hereto.
( ) was filed on _____
as Application Serial Number _____ and was
amended on _____.
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

Prior Foreign Application(s)

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Country	Application Number	Date of Filing (day, month, year)	Date of Issue (day, month, year)	Priority Claimed Under 35 U.S.C. 119
				Yes ☐ No ☐
				Yes ☐ No ☐
				Yes ☐ No ☐
				Yes ☐ No ☐

Prior United States Application(s)

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial Number	Date of Filing (day, month, year)	Status - Patented, Pending, Abandoned
60/114,573	12/December/1998	Pending

And I hereby appoint, both jointly and severally, as my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith the following attorneys, their registration numbers being listed after their names:

Thomas J. Scott, Jr., Registration No. 27,836; Stanislaus Aksman, Registration No. 28,562; Kevin J. Dunleavy, Registration No. 32,024; James G. Gatto, Registration No. 32,694; Scott D. Balderston, Registration No. 35,436; Tyler S. Brown, Registration No. 36,465; Christopher C. Campbell, Registration No. 37,291; Henry C. Su, Registration No. 37,738; Brian M. Buroker, Registration No. 39,125; Thomas G. Woolston, Registration No. 40,235; Charles F. Hollis, Registration No. 40,650; Kevin T. Duncan, Registration No. 41,495; Jonathan D. Link, Registration No. 41,548; Christopher J. Cuneo, Registration No. 42,450; Stephen T. Schreiner; Registration No. 43,097; Raphael A. Valencia, Registration No. 43,216; and George B. Georgellis, Registration No. P43,632 and Matthew G. Pryor, Registration No. P45,278.

All correspondence and telephone communications should be addressed to Hunton & Williams, 1900 K Street, N.W., Washington, D.C. 20006-1109, telephone number (202) 955-1500, which is also the address and telephone number of each of the above listed attorneys.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature _____ Date 10/05/99

Full Name of Sole Inventor	**CARROLL** Family Name	**Michael** First Given Name	Second Given Name
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Citizenship	**U.S.A.**		
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